

# AVIATION

*The Oldest American Aeronautical Magazine*

DECEMBER 24, 1923

Issued Weekly

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U. S. Naval flying boat laying a smoke screen

VOLUME  
XV

## SPECIAL FEATURES

NUMBER  
26

THE SUCCESS OF SKYWRITING  
U. S. RIGID AIRSHIP ZR3 DESCRIBED  
FOREIGN ENGINES FOR LIGHT PLANES  
ANNUAL REPORT OF THE AIR MAIL SERVICE

THE GARDNER, MOFFAT CO., INC.  
HIGHLAND, N. Y.  
225 FOURTH AVENUE, NEW YORK

# ADAPTABILITY

## Thoroughbred and Draught Horse in One

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75 H.P. 1000 day  
125 H.P. 1000 day  
175 H.P. 1000 day  
225 H.P. 1000 day

# WRIGHT MODELS T ENGINES

DECEMBER 24, 1923

# AVIATION

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## IN FAR AWAY CHINA

## AVIATION Readers Encircle the World

The following letter has been received from Canton, China. It is typical of many that are received from readers throughout the world and shows how indispensable AVIATION is if a complete picture of the progress of American aeronautics is desired.

### From an old Subscriber

"Enclosed please find ten dollars for which please renew my subscription to AVIATION. In the event that you have discontinued sending the magazine to my old address, please if possible send me the copies I have missed. AVIATION has been my greatest authority since the grass-roots days of '16, so protection manager of — Wuxia building airplanes during the war and later in field manager of a division of the Air Mail and now as aeronautical advisor to Dr. Sun Yat Sen in far away China.

"I have been a subscriber to your magazine since it was first published. In fact, I still have my first copy, now seven years old as well as all copies up until the time I came here.

"I have certainly derived great pleasure and much valuable information from your indispensable paper."

Are You a regular Subscriber?

AVIATION at Four Dollars a year (Canada \$5.00 Foreign \$6.00) brings to you every week the latest news and developments in American aeronautics.

THE GARDNER, MOFFAT CO., Inc.  
225 FOURTH AVENUE NEW YORK



Trade Mark

## NATIONAL AIR

Independent authorities agree that the airplane is now ready for commercial transportation. A Martin Bomber, for instance, carrying 1600 pounds in addition to passenger weight, recently developed an average speed of more than 114 miles per hour.

Railroads have worked for years to clip minutes from their schedules. Present policy is even reducing rather than increasing speed. Travel by rail seems to be fixed for a long time to come

at 60 miles per hour.

How will the development of the airplane affect the country? The railroads welded a loosely federated group of states into a nation. How closely knit will this nation become when its very air is nationalized?

Martin men not only feel the responsibility of maintaining their own leadership - but also the obligation, and the privilege, of building soundly for a whole people.

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EDITORIAL MANAGER

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No. 26

LABELLUS G. DREW  
EDITOR  
VICTOR E. CLARK  
MANAGER  
KARL H. UHLMANN  
CORRESPONDENT

### Russia's Bid for Air Power

**A**VIATION has repeatedly called attention to the remarkable fact that Soviet Russia is making a serious effort to become a first class air power. Some of the first steps, which appeared in the daily press as well as in English, French and Italian aeronautical magazines, indicate that these efforts are beginning to bear fruit.

The Russian air force, which two years ago was counted as an unaccountably heterogeneous assortment of obsolete airplanes is rapidly being equipped with up to date machines. All the new equipment, furnished by European manufacturers—Ansaldo observation planes from Italy, DHRA day bombers and Sturtevant fighters from England, Hanriot training planes from France—has for some time been streaming into Soviet Russia. And now a cable dispatch from the Hague asserts that the Fokker Company is working on a Soviet order for 300 patrol planes, and that large numbers of these ships have already been shipped to Russia after being passed on by a Russian testing commission which is staying at Amsterdam. In fact, should any doubt exist regarding the military nature of these ships—which have been mislabeled as "transport planes" in some newspaper reports—it will be sufficient to recall that the customs house at Riga, Latvia, recently detained a component of Fokker fighting planes bound for Moscow.

Military airplanes are of little use without well trained pilots. Hence, the report that one hundred and ten cadets of the Moscow air force have just obtained their superior pilot's brevet at the Moscow military flying school will prove of timely interest. Nor is it less interesting to learn that the Council of Commissioners has approved another emergency appropriation of 1,000,000 gold rubles for the purchase of military aircraft.

The encouragement given by the Soviets to commercial aviation is no less remarkable than their efforts to build up a strong air force. Our readers are familiar with the Moscow-Berlinberg air line, which has now successfully been opened for about two years with Fokker cabin planes. The list of the "Dorofoffs," which operate this service, is now undergoing expansion, while other airways are being opened up by two new Russian air transport enterprises. One of them, called the Yelshin Air Fleet, has inaugurated a service between Moscow, Kharkoff and Odessa, using Dornier "Kestrel" cabin planes with Boris Rogov captain. The other service, the "Dokudakoff," which appears to be the air transport branch of the Russian-Belarus enterprise—is engaged in the gigantic project of connecting Moscow, across Siberia, with Vladivostok, Russia's great outpost on the Pacific Ocean. A pioneer flight of 2500 miles' length has already been accomplished on this route toward the East, while other pioneer flights have been made into Central Asia and Persia with a view to having up these regions with Moscow.

The health of vision of these projects is truly amazing, considering the financial status of Soviet Russia, but what is even more astounding is that these plans are actually being carried out. For those individuals with Russia geography, suffice it to point out that the Moscow-Vladivostok project is a point of defense and ground transportation company directly with an airway from New York to Rio de Janeiro.

If American civil aviation had a spokesman in Congress, the permanent importance of pushing American air lines—and the Air Mail Service, in the first place—into Mexico, Central and South America, could perhaps be impressed upon our law makers with sufficient force to make them vote the necessary appropriations. But as civil aviation is, strictly speaking, neither within the province of the Army, the Navy, the Post Office Department or the Department of Commerce, or any other government department, it would not be surprising if Vladivostok found itself looked up by air with Moscow and the rest of Europe long before American commercial aircraft will cover the gap south of the Rio Grande.

### A Great Loss

**W**HEN the cables brought word that Lawrence Sperry had lost an airfield house lost in the English Channel, the heart of every American aviator was saddened. Not only had we lost one of our most capable pilots and engineers, a national experiment, but a bravely honest report whose national character seemed to be the spirit again of the day.

As a fair Sperry had no peer. He excelled in interpreting the meaning of every word of aircraft. His pioneering spirit was ever present. The automatic stabilizer, the air filter, the landing skid, control flying, and more important than all else, the flying torpedo, will always be associated with his name. While not generally known, it was in connection with the latter development that he was in Europe. Not meeting sufficient recognition at home, he took the usual course of seeking abroad a field to create an important name.

Everyone will live on the result of this tragic accident, for Lawrence Sperry probably had a wider circle of friends than any other American aviator.

### The Annual Air Mail Report

**T**HE annual report of the Air Mail Service, which is printed in this issue, serves as a timely reminder of the wonderful work done in your own, by this service. The performance percentage of 94.72 made last year, shows what can be accomplished in commercial aviation by organizing ability.

It is hoped that Congress will bear this in mind when next year's Air Mail appropriations are discussed, and that it will grant this service the means for further developing its activities.







# Skywriting - A Successful Commercial Activity

Planes of Skywriting Corporation of America Extend Operations over Entire Country



Photo Courtesy-Skywriting Corp. of America  
A skywriting SESA plane

Among the commercial activities in which airplanes are being used with marked success, skywriting work has found a place of advancement and popularity. Though of comparatively recent origin, has quickly risen to a place of considerable importance. Through this phase of commercial aviation is not a year old, its successful growth in this country, through the nationwide activities of the Skywriting Corp. of America, with headquarters at 30 E. 42d St., New York, has been very rapid.

## The Equipment

In January of this year one skywriting plane of this firm commenced commercial operations. Today fourteen planes have been equipped for skywriting, and twelve are in active use. The machines are Sikks single-engine fitted with 220 hp. Wheeler "Viper" engines, and have a high speed of 125 mi./hr. and a climb of 10,000 ft. in 11 or 12 min. Each of these planes has more than approximately 100 hp. making a total flying time for the Skywriting fleet of 1600 hr. During this time every plane has been equipped with either a new engine or one that has been completely overhauled.

Skywriting planes have flown over Kentucky, Iowa, Kansas, Mo., St. Louis, Mo., San Diego, Calif. and from Honolulu, Wash., to Jacksonville, Fla., and have written messages in the sky over

nearly every important city and state in the Union, with the exception of one or two Middle Western states, where there are no flying facilities at all.

An idea of the great distances covered by Skywriting planes is best illustrated by the flight of Pilot G. W. D. Gall, who recently reached San Antonio, Tex., Calif., started from New York and flew to San Antonio via Cleveland, Chicago, Des Moines, St. Paul, Minneapolis, Kansas City, Wichita, Oklahoma City, Fort Worth, Dallas and then he had no trouble of any kind on this long flight and gas skywriting demonstrations over all the big cities en route.

## The Operating Bases

The main base of the Skywriting Corporation is at the Ford Field, Garden City, one of the largest airports in the field, together with a smaller hangar, being occupied by its ships. At Framingham, Mass., the company has rented from the State the former Army Air Service flying field and has built a hangar for the housing of the skywriting planes. For operations in Pennsylvania and New Jersey, a field at Cranford Farm, Cranford, N. J., has been rented and a hangar erected by the company. In Illinois, the skywriting planes have their own hangar, located at Addison Field, which is operated by the Aero Club of Illinois. On the Pacific Coast flying operations are carried on from Los Angeles.

Alan J. Cassano, president of the Skywriting Corporation, became interested in skywriting while on a trip in Europe in the fall of 1932. May, Jack Savage, of London, England, who is the inventor of the present form of skywriting, gave his first public demonstration in England in May of that year. Mr. Cassano, realizing the immense possibilities of this type of advertising in America, promptly entered into negotiations with Meyer Berenson, and these resulted in the creation of the American company.

Meyer Berenson said Mr. Cassano had created an organization of famous pilots for skywriting operations. Some of these are attached to the American company—Captain



The staff of the Skywriting Corp. of America—(L. to R.) Mr. Jack Savage, Capt. G. A. Laughlin and Alan J. Cassano, president of the company

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Capt. Turner, A.F.C., G.A. Laughlin, D.F.C., D.E.C. Henry George P. Brady, Leslie Trol-Cox, C. E. McMahon and W.D. Gaidy, with many public and brilliant air records. Pilot Collier was formerly a well known flyer in the U. S. Air Mail Service before joining the Skywriting, with Captains Hume, McMahon and Brady were pilots for United States Transport, Douglas Airway and Transo Air line, respectively, on the European passenger routes.

The great organization of the Skywriting Corporation consists of numerous expert mechanics, engineers, etc., under the direction of Superintendent George Cook. There are also ten representatives attached to the company, who proceed ahead of the main and arrange for landing fields and supplies.

It is interesting to note that every man in the Skywriting camp is now serving during the World War.

## An Interesting Engine

The Prugot Automobile Co. of Paris, France, is reported to be completing the construction of a new aircraft engine that will burn vegetable and heavy oils. This engine is of the two stroke, two cylinder type, and is reported to develop 60 h.p. at 1800 r.p.m. The weight, dry, is said to be 44 lb.

The engine is of the overhead type and uses a compression ratio of 18 to 1. It can be started "cold," the initial stroke being done by a short piece of piston, the piston is in the combustion chamber and heated to white heat by means of electricity furnished by a small storage battery. It has intake and exhaust ports, and the scavenging is done by a small compressor. The fuel is injected in a liquid form.

Block tests of this motor will take place shortly. In the meantime it is interesting to learn that the Prugot Co. will shortly be converting outboard automobiles on a trip across the greater breadth of Africa, from Dakar to Capetown, and thence to Cairo and Constantinople, for the purpose of testing an outboard engine substantially similar to the outboard motor described above. This engine will burn vegetable oil which are either readily available in Africa or can be locally produced on the spot.

The French government is giving strong encouragement to the development of power plants for automotive vehicles that will operate on fuels other than gasoline, inasmuch as the world's principal oil wells are all controlled by American or British interests, and it is felt that these sources of supply might not remain available in case the United States or the British Empire were involved in a war.

## New Members A.C.C.

The following organizations and individuals were recently elected to membership in the Aeronautical Chamber of Commerce of America, Inc.—

Clas B. Bostwick, Babcock & Co., Indianapolis, New York City  
The Moto-Motor Co., Indianapolis, Long Island City  
Flight Aero-Advertising Corp., New York City  
R. W. Hume, Capt. G. A. Laughlin, New York City  
Thomas, Inc., Dept. Union, N. J.  
Clas C. Smith, L.W.P. Engineering Corp.  
Joseph F. Hume, Curtiss Aeroplane & Motor Co.  
Hobbs' Aero Engineering Corp., New York City

## N.A.A. Committees for 1934

The National Aeronautic Association has just announced the personnel of the various standing committees for the present year. The personnel of these committees, as approved by the Executive Committee, are given in the right hand column.

## N.A.A. OFFICERS FOR 1934

**President**  
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**Vice-President**  
Ralph W. Cress

**Treasurer**  
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Ralph Urban, Detroit, Mich.  
R. W. Schenck, Chicago, Ill.  
Herman F. White, Kansas City, Mo.  
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Charles Duggan, Oklahoma City, Okla.

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Charles Sparks, Brooklyn, N. Y.  
Dr. A. L. Hayward, Paris, France

**Legislation Committee**  
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Ray G. Finkbeiner, Dayton, Ohio  
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Alexander Armstrong, Baltimore, Md.  
Guthrie L. Lusk, Boston, Mass.  
Ralph W. Cress, Evanston, Ill.  
Melvin M. Johnson, Boston, Mass.

# World's Largest Airship Nearing Completion

**ZR3, Built by the Zeppelin Co. for the U. S. Navy Department  
To Cross Atlantic Next Spring**

The rapid airship in its modern form is a German conception which received its highest development by the Zeppelin Co. at Friedrichshafen, Germany, founded by Count von Zeppelin more than twenty years ago. Under the Versailles Treaty, was restricted by the Allied Powers from building other than commercial airships of a gross capacity not greater than 20,000 cu. m. This limit is too small to warrant the effort of creating a steady stream of traffic across the Atlantic in such a small ship would be an unprofitable one.

The Allied and Associated Powers, however, made an exception in this restriction, for they authorized the United States government to have constructed in Germany a rigid airship of 30,000 cu. m. capacity, nearly two and one-half times as large as Germany is originally permitted to build. This ship is to subject to the condition that it will not be used for military purposes.

## Embodies Latest Practice

The United States Navy Department is the government department charged with the development of rigid airships. The Navy Department accordingly entered into negotiations with the German government and the Zeppelin Co. to construct a commercial type airship of approximately 30,000 cu. m. capacity, and upon its completion to deliver it to a German vessel in the U. S. Naval Air Station, Lakehurst, N. J. This airship was to embody the very latest knowledge of the Zeppelin Co., particularly as regards provisions for adequate strength and safety.

All details in connection with these contracts were completed the latter part of June 1922, and early in July the inspection designated to represent the Navy Department took up their residence at Friedrichshafen, where the main plant of the Zeppelin Co. is located.

The Navy Department had full confidence in the recognized ability of the Zeppelin Co., but in order that the Navy Department might be convinced that this ship would represent the "best model" known to the world, it insisted upon the presence of a Zeppelin works to follow the construction day by day. The Zeppelin Co. on the other hand was anxious to demonstrate its great experience in airship building, and cordially received the Navy Department's representatives.

## Size of the ZR3

The size of this airship is the same as the latest airships built by the Zeppelin Co. at Lakehurst, N. J., with a gross capacity of 30,000 cu. m. The ZR3 has, however, been designed specially to accommodate passengers, and particular attention has been directed to all features involving convenience and comfort.

The general dimensions of the ship are as follows:—  
Length, 200 m.  
Height, 30 m.  
Span, 40 m.  
Gross capacity, 30,000 cu. m.

Many figures however do not give an adequate conception of the tremendous size of this great aerial liner. Nothing but the ZR1 has ever been launched. A letter size of the ship's dimensions may be obtained by considering the size of the battleship which will eventually launch the "Queen of the Air." This liner is the largest in the world and is of such enormous size that the Worksop Building of placed in its side could be placed under the hangar with plenty of room to spare.

## Power Plant

To drive this ship through the air at a speed of 40 mi./hr. 200 h. p. is required. This is obtained from 18 100 h. p. type Maybach engines of 600 hp. each. Each engine is mounted on a separate power car, and the five power cars are distributed along the outer side of the ship, and supported

to the airship's framework by means of wire cables and struts.

These engines, which have been designed by the Maybach Motor Co. of Friedrichshafen, which is affiliated with the Zeppelin Co., will contain many new features. They have been especially designed for great endurance and long life, features essential for commercial airships which will make long flights over the sea. One of the main features is that the engines can revolve, then stop and start with the weight of revolving gears. All five engines may be operated at the same time, so that the ship's forward progress can be halted very quickly. The revolving feature was introduced in the engine designed for the ZR1.



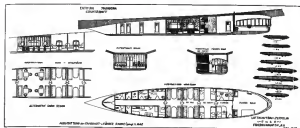
One of the first power cars of the U. S. model airship ZR1, each of which will be fitted with a 400 hp. Maybach engine.

Navy submarine chasers during the World War, but this is the first time this feature has ever been incorporated in an aviation carrier.

The ZR3 will have incorporated in it many refinements of design, the results of almost twenty-five years' continuous efforts on the part of the Zeppelin Co. The equipment and accommodations for passengers will be as complete and comfortable as the Zeppelin Co. is capable of designing, with all their years of experience behind them.

## Luxurious Accommodations

To get an idea of the luxurious appointments and officer's quarters on the ZR3, which will have accommodations for thirty passengers, one has only to recall the equipment on the latest rigid airships. The seating and sleeping arrangements compare favorably with the best American Pullman cars. These quarters are arranged in the main cabin, which is equally reserved to the food under the forward end of the ship. The passenger cabin is also fitted with a modern kitchen equipped with electrical stoves. The guest room is divided into five compartments, each compartment seating five persons comfortably. The windows are large so as to give the passengers an excellent view of the world beneath. These conditions will be as luxurious as modern ocean liners. The passengers will have none of the discomforts of transatlantic air travel. The motion in an airship of this size is unimportant, and there are no other discomforts to detract from the pleasure of the voyage. Real wartime transportation accommodation for enlisted men and you can picture the crew of the ZR1, in all about twenty-two men.



Island arrangement drawings of the air, as fitted for day and night use, of the Zeppelin airship ZR3 now building for the United States Navy.

their belongings and themselves stowed away snugly in bunks or in about the corridor running off the main body of the ship. Quarters are so located that each man will at all times be within the arms of his duty.

The ZR3 has been fitted with new mooring equipment so that the ship may be secured to a mooring mast. Equipment in the United States is that the mooring mast will prove to be the device which will definitely demonstrate the commercial value of rigid airships.

## Extensive Trials Before Crossing

Immediately after the completion of the ship it will be fitted with hydrogen gas, a total of 2,500,000 cu. ft. of hydrogen being required for one flight. To manufacture this amount of hydrogen, 280 tons of coal will be needed.

Several short trial flights of from two to four hours duration will follow, to see that all parts function properly. This will be followed by a longer flight of about 24 hrs. This flight will serve as a thorough test of the engines and of all the ship's equipment, and if possible the ship will be flown into land areas to prove its performance and power of navigation.

During the war it was often necessary to place the airships held by the Luftschiffbau Zeppelin (Zeppelin Co.) in service as soon as possible. On account of the great experience in this construction, few airships were sent to the front as new arrivals after only one or two flights. The ZR3, in leaving the construction yard, 12,750 ft. in length, will be the largest and most powerful of the more than one hundred Zeppelin type airships previously constructed. This great number is the best guarantee that the new ship will be the last word in the field of scientific construction. It is desired however for the ZR3, to undertake a thorough test in navigation, safety and performance.

The speed, maneuverability of the airship's maintenance and performance will be obtained through this crossing from Europe to America.

## The Transatlantic Flight

The transatlantic flight, originally scheduled for last week, has been postponed to take place next spring. The first transatlantic flight is the East Coast of the United States, on a straight line at 3000 feet, while the second flight is in the Atlantic from New York to New York, across an average distance of only 2800 nautical miles. As it will be known, very stormy weather would prevent on the

North Atlantic coast during the winter months. In the winter time the velocity of the west winds on the direct route at sea level is averaging 27 mi./hr. and at the altitude of flight of the airship there will be an average headwind of at least 24 mi./hr., so the wind is rapidly increasing at the higher levels. As the progress of the airship in flight will, of course, be increased by the speed of head winds, it results that the crossing time would be considerably increased on the direct route. For instance, with the ship going at a crossing speed of 60 mi./hr. the passage would take about 140 hr., for which reason it is probable that instead of flying the direct, northern route preference will be given to a more southerly route, where less violent headwinds are to be expected. As the average west winds in the vicinity of the 30th degree of latitude are considerably less, it is planned to fly from Friedrichshafen across southern France, passing Cape Finistere and the Azores Islands, to the south of the Azores and thence southwest to Lakehurst, N. J. This route distances about 4000 nautical miles in length, being nearly one third longer than the direct route over the English Channel, Ireland, Newfoundland and Nova Scotia. On account of the longer flight route nothing like a new crossing record can be expected. It is estimated, however, that the ZR3 will make the passage in from 75 to 100 hrs., that is, it takes three and four days.

The flight will be made without any intermediate stop and the ship will be accompanied by the experienced personnel of the Luftschiffbau Zeppelin. The crew on this flight will be composed of over thirty men, and gasoline alone will require 30 tons, the capacity of three railway tank cars, and to speak of the supply of oil space party, water for ballast, drinking and washing, and food supplies.

## Interesting Commercial Possibilities

Let us consider the performance of this airship on a regular air line, for example a route from San Francisco to Honolulu (Hawaii), a distance of 2000 nautical miles. This journey today takes a steamship about five days. Under favorable weather conditions this airship would be able to make the trip in Honolulu in a little more than 26 hr., the return flight to San Francisco to about 36 hr., the difference being due to unfavorable winds which are likely to be found on the return trip. It would be possible, for example, to leave San Francisco on a Saturday morning and arrive in Honolulu on Sunday morning. The possibility of using the short time trip of almost over 3000 miles would then exist. The return trip would start in the evening and the airship could on Tuesday



morning again be in San Francisco, so that the whole journey would be only a little more than a week end trip.

December 26, 1981

The party visited the Repair Shops at Wilbur Wright Field and manifested great interest in the work in progress. The Army Repair and Engine Repair Departments. These shops are doing a tremendous amount of work under the direction of the Secretary of War, who had been one of the speakers before, expressed his admiration and pleasure at the spirit and improvement of the huge airplane. During a portion of the day the Secretary was in conference with Mr. Gilbert Eubank, Chairman of the Dorton Branch of the National War Council, and Mr. Frederick B. Patterson, President of the National Aeronautic Association and President of the National Cash Register Co.













Students and Instructors, Curtiss Flying School, Garden City, N. Y.

## FIFTY STUDENTS TAUGHT TO FLY IN 1923

30 Graduated and presented with aeroplanes under regular course.

7 Taught under special instruction.

13 Curtiss employees trained under special offer to Curtiss men.

50 Total, WITHOUT ACCIDENT OR INJURY TO STUDENT OR PLANE.

Aeroplanes flown by the Curtiss Exhibition Company covered over 100,000 miles in 1923. Ninety per cent of this flying was paid commercial work at regular flying rates. The prospects for 1924 are even more promising.

### SPECIAL OFFER

We teach you to fly and present you with a JN-4 aeroplane in good flying condition, less motor, for \$500.00. New motors for these machines can be purchased at present for correspondingly low prices.

Fifteen students have already enrolled for the coming year. We do not guarantee how long this offer will be continued but all enrollments accepted at the present will entitle the student to participate in the offer, even should it be discontinued before he should care to start the course.

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